REMARKS/ARGUMENTS

This Amendment is in response to the Office Action dated July 26, 2005. Claims 1-45 remain pending in the present application. Claims 1-4, 6, 8, 10-19, 21, 23-34, 36-38, 41, 42, 44 and 45 are rejected and claims 5, 7, 9, 20, 22, 35, 39, 40, and 43 are objected to. Claims 1-3, 5, 13, 14, 32-38, 39, 41, and 42 have been changed by this amendment.

The Drawings

The Examiner objected to the drawings because of a minor informality. Specifically, the Examiner stated that the structure shown in Fig. 1 does not show a connection allowing computer systems 14, 16, and 18 to communicate with each other, as described in the specification. The Examiner stated that applicant is required either to modify Fig. 1 or delete the phrase noted above. Accordingly, Applicant has modified Fig. 1 as indicated in red on the enclosed photocopy, such that connections are shown between the computer systems 14, 16, and 18, allowing these computer systems to communicate with each other as indicated in the specification on page 7, lines 7-11. These drawing changes therefore do not add new matter. A formal drawing incorporating these changes will be submitted upon allowance of the present application. Applicant respectfully requests that the objection to the drawings be withdrawn.

The 103 Rejections

The Examiner rejected claims 1-4, 6, 8, 10-19, 21, 23-34, 36-38, 41, 42, 44 and 45 under 35 U.S.C. 103(a) as being unpatentable over Xu (U.S. Patent Application Publication No. 2004/0117682) ("Xu") in view of Hou et al. ("Hou"). Applicant respectfully traverses, and has

amended claims 1, 13, 32, 36, 38, and 41 to more clearly point out the invention, and has amended dependent claims 2, 3, 5, 14, 33-35, 37, 39, and 42 for clarity and to be in accordance with their respective parent claims.

Claim 1 recites a method for maintaining timers for a computer system, in which a plurality of timer values are written in a connection table, where each timer value indicates a timeout for a different timer. Each timer is associated with one of a plurality of connections of the computer system, and each one of the connections is associated with a plurality of the timers. One of the timer values for each of the connections is written to a global timer array, such that the global timer array can be scanned to determine when timeouts occur for active connections to the computer system.

In contrast, Xu discloses a system and method for synchronizing processors in a distributed computer system, in which processors may read a global clock counter value associated with a globally accessible clock counter. Each processor can also access its respective local time value and synchronize its own timer and adjust its synchronization parametrics, to synchronize the processors. An application in a processor or application space can issue a time stamp request, and the processor performs a time stamp computation and returns the time stamp to the requesting application (page 4, paragraphs 36 to 48).

Hou et al. discloses a design and incorporation of a timeout mechanism in a load-sharing, distributed real-time computer system, in which failures of nodes are diagnosed using timeouts. Timeout periods are determined at each node and the probability of detecting node failures is maximized, subject to a predetermined probability of falsely diagnosing a healthy node as faulty.

Xu and Hou do not disclose or suggest Applicant's invention of writing timer values in a connection table and writing one of the timer values for each of the connections in a global timer

array as recited in claim 1. First, Xu does not disclose a connection table having a plurality of timer values for timers. The global clock counter stores a single counter value, not multiple values (page 2, [0019], [0020], [0021]). The interval timers of the processors also store a single timer value, and are not connection tables (page 2, [0020], [0021]). The Examiner states that Xu discloses writing timer values in a "global time stamp" that is similar to a connection table, but Xu's time stamp is a single timestamp value provided to a requesting application, and is not written to a connection table that has a plurality of timer values (page 2, [0022]; page 3, [0036], [0048]).

Furthermore, Xu does not disclose or suggest a method in which each one of the connections is associated with a plurality of timers as recited in claim 1. In Applicant's invention, each recited connection has multiple timers associated with it. In contrast, Xu discloses that a processor (connection) has only a single timer associated with it, i.e., the interval timer 204, 210, 216 of Fig. 2. Xu does not disclose or suggest the multiple timers for each connection as recited by claim 1.

In addition, Xu does not disclose or suggest writing one of the timer values for each of the connections to a global timer array. The global clock counter of Xu stores only a single global clock counter value--this clock counter is not an array of multiple timer values. Also, the global clock counter of Xu does not store timer values written from a connection table, since Xu does not disclose any such a connection table, and the global counter value is a read-only value that is not written during the system's operation (page 3, [0023]). The time stamp that Xu outputs is a value provided to an application indicating the time at which an event occurred (page 1, [0001]), and is not a timer value written to a global timer array. In addition, Xu does not disclose or suggest that one timer value, from a group of multiple timer values for each connection, is stored in a global array, since Xu does not disclose or suggest having multiple timer values for any one connection.

Applicant's claim 1, in contrast, provides a global timer array that has multiple timer values, including one timer value for each connection, and those timer values were written from a connection table of timer values.

Hou also does not disclose or suggest the features of claim 1. Hou does not disclose or suggest a connection table having a plurality of timer values for timers, nor connections associated with a plurality of timers, nor writing one of the timer values for each of the connections to a global timer array, as recited by Applicant. Hou does not disclose any details of how timeouts are grouped, written or stored; Hou is concerned with determining or calculating timeout values for distributed processing tasks, and does disclose or suggest the features of Applicant's claim 1.

Applicant therefore believes that claim 1 is patentable over Xu in view of Hou. Dependent claims 2-12 are patentable over Xu in view of Hou for at least the same reasons as claim 1, and for additional reasons. For example, claim 2 recites that each timer value written to the global array for each connection is associated with the timer that will expire earliest out of the timers associated with that connection. The Examiner states that Xu's issuing of time stamps necessarily includes a timer value written to the global timer array which is associated with the timer that will expire the earliest, the "order of events" described by Xu at page 3, [0035]. However, Xu at the cited paragraph is describing synchronizing processors so that their interval timers will be accurate, the timestamps the processors issue will be accurate, the events are described with accurate times, and events may be ordered accurately. Xu mentions nothing about providing a plurality of timers for one connection and taking a timer from that plurality which will expire earliest, and writing that earliest timer in a global array—and doing this for each connection, as recited by claim 2. Each connection (processor) of Xu has only one timer, the interval timer, and Xu has no global array that includes

multiple timer values from a connection table. Hou also does not disclose or suggest the features of claim 2.

Claim 13 recites a method for examining timers for a computer system, including scanning a plurality of array timer values for timeouts, each array timer value stored in a timer array and representing a timer, where a single array timer value is stored in the timer array for each one of a plurality of active network connections to the computer system, and where each one of the active network connections is associated with a plurality of timers. A computer system function is caused to be initiated when a timeout is indicated by a particular array timer value associated with a particular active connection, the computer system function being associated with one of the timers used for the particular active connection.

Similar to the explanation above, Xu and Hou do not disclose or suggest a method in which each one of the active connections is associated with a plurality of timers, nor having a timer array which stores a single array timer value (from the plurality of timer values available) for each active network connection. Each connection (processor) in Xu is associated with a single timer, and Xu does not store timer values in any timer array. Hou does not disclose or suggest any implementation for scanning or storing timers, and is concerned with determining timeout values for specific distributed processing applications. Applicant therefore believes that claim 13 is patentable over Xu in view of Hou. Claims 14-22 are dependent on claim 13 and are patentable for at least the same reasons as claim 13, and for additional reasons. For example, claims 14 and 17 are patentable for reasons similar to claim 2, as explained above. Claims 15-16 recite referencing a connection table when a timeout is indicated; Xu and Hou do not disclose these features,e.g., Xu is concerned with issuing timestamps describing when an event occurred, not referencing timer values in a connection table when a timeout occurs.

Claim 23 recites a method for restarting a timer for a computer system including starting a timer, where the timer is for determining when a timeout occurs for an associated network connection of the computer system. The timer is restarted if data is received from or transmitted to the connected computer system before the timeout occurs and after a predetermined time interval after the timer is started. The timer is not restarting if data is received from or transmitted to the connected computer system before the timeout occurs and within the predetermined time interval after the timer is started. Xu and Hou do not disclose or suggest restarting a timer as recited in claim 23. Xu discloses synchronizing processors and issuing timestamps, but does not teach or suggest any methods for restarting timers, nor restarting timers based on when data is communicated in relation to a predetermined time interval, as recited in claim 23. Hou also does not disclose or suggest any methods for restarting timers as recited in claim 23. Applicant therefore believes that claim 23 is patentable over Xu in view of Hou. Claims 24-31 are dependent on claim 23 and are patentable over Xu in view of Hou for at least the same reasons as claim 23, and for additional reasons. For example, claim 30 recites a plurality of timers for a network connection, which is not disclosed or suggested by Xu or Hou as explained above.

Claim 32 recites a computer readable medium including program instructions to be implemented by a computer, the program instructions for maintaining timers for a computer system and implementing steps similar to those described above for claim 1, and is believed patentable over Xu in view of Hou for at least the same reasons as claim 1. Claims 33-35 are dependent on claim 32 and patentable over Xu in view of Hou for at least the same reasons as claim 32 and for additional reasons.

Claim 36 recites a system for maintaining timers for a computer system that has features similar to those for claim 1, and is believed patentable over Xu in view of Hou for at least similar

reasons as claim 1as explained above. Claim 37 is dependent on claim 36 and patentable over Xu in view of Hou for at least the same reasons as claim 32 and for additional reasons similar to claim 2.

Claim 38 recites a computer readable medium including program instructions for examining timers for a computer system that has features similar to those for claim 13, and is believed patentable over Xu in view of Hou for at least similar reasons as claim 13 as explained above. Claims 39-40 are dependent on claim 38 and patentable over Xu in view of Hou for at least the same reasons as claim 38 and for additional reasons.

Claim 41 recites a system for examining and processing timers for a computer system that has features similar to those for claim 13, and is believed patentable over Xu in view of Hou for at least similar reasons as claim 13 as explained above. Claims 42-43 are dependent on claim 41 and patentable over Xu in view of Hou for at least the same reasons as claim 41 and for additional reasons.

Claim 44 recites a computer readable medium including program instructions for restarting a timer for a computer system that has features similar to those for claim 23, and is believed patentable over Xu in view of Hou for at least similar reasons as claim 23 as explained above. Claim 45 recites a system for restarting a timer that has features similar to those for claim 23, and is believed patentable over Xu in view of Hou for at least similar reasons as claim 23 as explained above.

In view of the foregoing, Applicant respectfully requests that the rejection of claims 1-4, 6, 8, 10-19, 21, 23-34, 36-38, 41, 42, 44 and 45 under 35 U.S.C. 103(a) be withdrawn.

Applicant thanks the Examiner for the indication that claims 5, 7, 9, 20, 22, 35, 39, 40, and 43 allowable if rewritten in independent form including all the limitations of base and intervening

claims.

In view of the foregoing, Applicant submits that claims 1-45 are patentable, and respectfully requests reconsideration and allowance of the claims as now presented.

Applicants' attorney believes this application in condition for allowance. Should any unresolved issues remain, the Examiner is invited to call Applicants' attorney at the telephone number indicated below.

Respectfully submitted,
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Date

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